Local Technology Plan

for

Nashoba Valley Technical School District

LEA Code 08520605

100 Littleton Road
Westford, MA 01886

July 1, 2008 -June 30, 2011
Approved by the Massachusetts Department of Education
through June 30, 2009
Carol Heidenrich, Director of Technology

Technology Plan

Benchmark 1
Commitment to a Clear Vision and Implementation Strategies

A. The district's technology plan contains a clearly stated and reasonable set of goals and implementation strategies that align with the district-wide school improvement plan. The district is committed to achieving its vision by the end of the school year 2010-2011.

The school's current use of computer and telecommunication technologies has been reviewed to support the school in updating the technology goals that it wants to achieve by having all faculty and staff complete an annual Technology Plan Update Request Form. The goals and the steps required to achieve the goals are outlined in this Technology Plan, which includes a three-year timeline and a related budget for phased implementation. The Plan was developed under the guidance of the Department of Education Local Technology Guidelines, No Child Left Behind, District Goals, District Improvement Plan, Massachusetts Curriculum Frameworks, Instructional Technology Standard, District Long-Range Plan, Perkins Local Plan and the Technical Frameworks

Goals:

The district is committed to achieving the following goals by June 30, 2011:

Upgrade Business Automation Technology computers to meet the software requirements and additional students in this program – current computers will be relocated to appropriate areas for student and staff use.

Upgrade Design and Visual Communications 11 outdated computers to meet the software requirements for this program, 11 of the 22 computers were upgraded in 2007-2008.

Upgrade IDF 3 with additional patch panel service to support individual RJ-45 ports for all computers in Design and Visual Communications to remove use of shared switches in this area.

Upgrade one outdated security system unit from floppy disk storage to DVD-R

Upgrade Library Media Center 26 computers purchased in 2003 in 2009 and relocate 26 computers to individual classroom use.

Provide permanently installed LCD projectors in computer labs A132, F114 and G216 and provide additional Smartboards for A132, F114, Design and Visual Communications and Business Automation Technology.

Develop policy for computer replacement to meet recommended Department of Education timeline of five years or less. Continually upgrade computer inventory to meet Department of Education standards for Category A computers and goal of ratio of one student per computer.

Continually upgrade printer inventory to ensure updated and efficient printing resources are available in all locations

Future access to the financial management system via the school-wide network is planned for all staff to input purchase orders for electronic signature to expedite purchase orders and reduce paper forms.

The plan is to upgrade the system with an ID camera with higher resolution and additional software in IPass to allow ID pictures to be taken directly in the program and do away with outdated Assure ID software with poor quality and high maintenance.

Continue utilizing and upgrading Nextel Direct Connect telephone service and ensure that this technology is fully utilized by all administrators and staff to improve education through communicating with each other immediately in cases of emergency. An additional feature to be investigated is to create a wireless interface between the existing data systems to use with Nextel digital phone/radio devices. The resulting communication system will allow staff real-time access to information, allowing instant access to student information. Results will be increased productivity, decreased paperwork, and reduced overhead. The use of Nextel phones allows the Technology Department staff to facilitate communication between staff members, provide the ability to make support and repair calls from any location, and facilitate contact with key district personnel and vendors. This feature creates increased efficiency in supporting technology for teaching and learning.

Upgrade Web site design and hosting to allow for more effective communication with students, parents, staff, School Committee members and the community. Promote the Web site as a school-wide communication tool everyone must utilize and ensure that proper individuals are able to quickly and easily update Web pages pertaining to their areas of responsibility.

Review of methodology and staffing for managing and servicing the computer hardware/software, network components, data management, and overall District technology requirements, roles and responsibilities to reduce the increased downtime experienced and more adequately adhere to the strict timelines of all Department of Education reporting requirements.

To adequately address Benchmark 4 Accessibility of Technology and Internet Access of at least 100 kbps to each computer, the goal is to investigate other options to the current T-1 Internet service. Additionally, higher bandwidth is required to meet Benchmark 5 E-Learning and Communications is to provide additional bandwidth to accommodate interactive video on the local, state, regional, national, and international level.

For secure remote/offsite backup, vendors will be researched and recommended.

An evaluation rubric will be created for periodic reporting on the status of Technology Plan goals.

Professional Development Benchmark 3:

To meet Benchmark 3 for Technology Professional Development, the goal is to provide additional organized professional development for all staff. This professional development will consist of at least 45 hours of high-quality technology professional development, including technology skills and integration of technology into instruction.

A study group for VCTCS (technical competencies) will be instituted over the next three years to ensure that all technical instructors are properly trained in the use of the Web-based VCTCS system for input of student competencies.

On-line professional development will be pursued by the District to offer flexible technology training for staff.

The District will continue to participate in the Massachusetts TSAT on an annual basis to provide administrators and teachers with useful data for setting personal goals for technology professional development.

By the school year 2010-2011 the goal is to achieve a level of 60% of teachers at proficiency as defined by the Massachusetts TSAT. This will require increasing by 19% the number of teachers having reached the proficiency level or advanced, with a current total of 41% of teachers at proficiency or advanced level; 15% are at proficiency and 26% have reached advanced level.

One goal of professional develop activities will be to incorporate applications of e-learning to include courses, cultural projects, virtual field trips, etc.

Staffing Goals:

One District level Technology Director/Coordinator is recommended in Benchmark 2 for Technological Integration and Literacy Staffing and this position is in effect. Due to the diverse nature of the roles and responsibilities of the Director of Technology, the goal is to review the technological requirements of the district to ensure that these requirements are adequately addressed at all times.

One Instructional Technology teacher is recommended for every 60-100 staff members in Benchmark 2, Technology Integration and Literacy. To adequately address Benchmark 2 for Technological Literacy Staffing, the roles and responsibilities of those partially providing this responsibility; the Library Media Technology Specialist, Computer Technology Specialist, Business Automation Technology Instructor and Director of Technology, will be reviewed and recommendations made.

Dedicated staff to support data management and assessment is recommended in Benchmark 2, Technology Integration and Literacy. To adequately address Benchmark 2 Technology Integration and Literacy Staffing recommending dedicated staffing for data management and assessment, the goal is to review the roles and responsibilities of the individuals fulfilling these responsibilities to ensure that the data and assessment requirements for the District are adequately managed at all times.

To meet the staffing recommendation of providing at least one FTE and/or contracted services to support every 200 computers in Benchmark 4 Accessibility of Technology, the roles and responsibilities of the Director of Technology, Computer Technology Specialist and program support from Business Automation Technology and Electronics will be reviewed to ensure that adequate support levels can be consistently provided.

Implementation Strategies:

Funding from outside agencies will be sought to support the improvements recommended in this plan. E-rate funding has been greatly beneficial to the District in the past years and will continue to be sought. Grant and private funding sources will be investigated continually to support this plan.

The staffing component is complex with many differing roles and responsibilities. To properly implement these staffing requirements, the first implementation strategy will be to survey other Districts of similar size on their staffing components with details on roles and responsibilities. This data will be compiled into a report for review and recommendations. The second phase will be to work with outside vendors to develop a plan for technology staffing and support that will be both efficient and cost-effective.

B. The district has a technology team with representatives from a variety of stakeholder groups, including school committee members, administrators, and teachers. The technology team has the support of the district leadership team.

The faculty, administration, School Committee, School Council and Advisory Committees of the school contribute to the technology planning for the district.

C. Needs Assessment

1. The district assesses the technology products and services that will be needed to improve teaching and learning.

All stakeholders participate in the assessment of products and services relevant to their teaching and learning programs along with the supporting administrative technology in conjunction with the Director of Technology and Computer Technology Specialist. The methodology utilized includes recommendations from the Technology Director's List Serv comprised of school districts from across the state. Assessment of products and services is further strengthened due to the procurement requirements in the State of

Massachusetts requiring three quotes are for all purchases over $10,000 and sealed bids for items over $25,000. Whenever possible the District purchases through the Massachusetts Comm-PASS program which holds vendors to rigorous standards and helps to ensures reliability with a high level support mechanism for products and services.

2. *The technology plan includes an assessment of the services and products that are currently being used and that the district plans to acquire.*

The Technology Plan Update Form has been devised to allow staff members to submit requests for the plan on a continual basis. The annual budget development process allows for all staff to recommend technology purchases to be approved by their supervisors, the Director of Technology and the Superintendent. All staff members complete the Technology Plan Update Request form annually for assessing the current technology and planning for the future.

The current services and products utilized by the District have grown considerably over the last three years. At the time of this writing there are 25 servers in the building as listed below:

1. Altiris Computer Imaging server
2. Avid Unity Server for Television Video Production
3. Banking/Marketing Point of Sale
4. Cafeteria Lunchbox Point of Sale
5. Cosmetology Point of Sale
6. Culinary/Restaurant Point of Sale
7. Design and Visual Communications Splash Server for Xerox Docucolor 12 Digital Printer
8. Dukane PA system controlling bells and announcements
9. Electronic Sign
10. Exchange 2007 E-Mail server
11. Firewall
12. Follett Destiny electronic database server for Library Media Center and textbooks
13. HVAC Server – Facilities
14. CIPA Compliant internet filtering server to effectively monitor appropriate Websites
15. IPass Student Management Server recently upgraded to include IStaff for staff data management to meet the requirements of EPIMS reporting to the Department of Education
16. Administrative server for Payroll and Budgetsense Financial data
17. Riso Assessment server along with Test Vault software
18. Security System Servers (2)
19. Student file server
20. Teacher file server
21. Telephone System – Iwatsu
22. Voicemail system

23. Xerox Document Archiving Server
24. Webcasting ftp server for video archiving/posting on Web

Additional Web-based services supported through the Technology area include:

Alert Now Web-based electronic communication system
AllData Web-based automotive system
Career Cruising Software for Web-based student career planning and assessment
EBSCO Web-based research databases to support the Library Media program
E-Sped Web-based IEP software
Schoolcenter Web site hosting
VTCTS – Web-based competency scoring for all technical programs
Weatherbug Achieve – Web-based weather curriculum resources

D. The district has a CIPA-compliant Acceptable Use Policy (AUP) regarding Internet and network use. The policy is updated as needed to help ensure safe and ethical use of resources by teachers and students.

The District Acceptable Use Policy approved by the School Committee demonstrates the approved computer, network and Internet uses in the District. The policy is updated as necessary.

E. Budget

1. The district has a budget for its local technology plan with line items for technology in its operational budget.

The budget shown below demonstrates the line items in the operational budget for implementing this technology plan.

2. The budget includes staffing, infrastructure, hardware, software, professional development, support, and contracted services (including telephone services).

The budget below includes all the recommended categories for the technology plan: staffing, infrastructure, hardware, software, professional development, support and contracted services.

Budget	***2009***	***2010***	***2011***
Technology Salaries	120510	124125	127848
Technology Supplies	6300	10475	7000
Hardware	61000	65000	65000
Software & licenses	14125	20375	24025
Maintenance	10920	11420	10920
Network	14120	11620	12000
Professional Development	5,000	5,000	5,000
Total	***228984***	***250025***	***248804***

3. *The district leverages the use of federal, state, and private resources.*

Funding from outside agencies will be sought to support the improvements recommended in this plan. E-rate funding has been greatly beneficial to the District in the past years and will continue to be sought. Grant and private funding sources will be investigated continually to support this plan.

4. *For districts that plan to apply for E-rate reimbursement, the technology plan specifies how the district will pay for the non-discounted portion of their costs for the services procured through E-rate.*

The District will pay for the non-discounted portion of costs for services procured through E-rate within the line item under Network called Technology Utilities. The full portion of the expense is always budgeted in the local budget on an annual basis as is required whereby E-rate funding is not guaranteed.

F. Evaluation

1. *The district evaluates the effectiveness of technology resources toward attainment of educational goals on a regular basis.*

This plan will be updated on a regular basis as it becomes evident during implementation that changes are needed. To this end an on-going process will be developed to monitor, evaluate, and revise the plan. On-going monitoring and evaluation of the plan will provide answers to such questions as:

- Which objectives have been attained / Actions taken during the past year?
- Has attaining these objectives / taking these Actions enabled students to meet or exceed curriculum standards in all areas and if not why not?
- Which of the past year's objectives that have not been met / Actions that have not been taken need attention?
- What needs to happen in order for these objectives to be met / these Actions to be taken?
- Based on the evaluation of the past year, what changes in objectives, priorities, and implementation strategies are required?

The evaluation will include input from the Superintendent, the Assistant Superintendent/ Principal, the Director of Technology, the academic, technical and administrative staff, and technical advisory boards along with data provided by curriculum assessments and annual school-wide technology surveys of staff. The Director of Technology will meet with representatives of each department to collect and compile this information. The results will serve as a basis for action planning for the coming year.

The Technology will be evaluated on a regular basis to assess progress, make recommendations, and continually support the integration of technology into academic,

technical and administrative functions. The plan will be revised to reflect new information and changing conditions.

The Director of Technology will furnish periodic progress reports to the Superintendent, the Assistant Superintendent/Principal, School Committee and the staff that include the results of the evaluation and the action plan with related budget for the coming year. The school community will be informed of the progress of implementation through Web posting of this information, open houses and programs which feature and display projects which have incorporated technology.

- Nashoba will measure the results that have been accomplished during the previous year against its technology plan utilizing the Department of Education Technology Plan update submitted on a yearly basis.

- Nashoba will revise its technology plan for the coming year based on the results of the annual monitoring and evaluation and the recommended 2011 Technology Benchmarks from the Department of Education.

    2. *The district's technology plan includes an evaluation process that enables it to monitor its progress in achieving its goals and to make mid-course corrections in response to new developments and opportunities as they arise.*

In addition to the above-mentioned evaluation procedures for the Technology Plan, in conjunction with the data provided on the annual Technology Plan Update forms to the Department of Education, a rubric of the goals for the three-year technology plan will be updated. The rubric contains the benchmarks, goals, responsible person(s) and status update.

Benchmark 2
Technology Integration and Literacy

A. Technology Integration[1]

1. *Outside Teaching Time - At least 85% of teachers use technology every day, including some of the following areas: lesson planning, administrative tasks, communications, and collaboration. Teachers share information about technology uses with their colleagues.*

The annual staff technology use survey is completed by all faculty and staff to obtain data on technology usage for teaching and learning. The staff evaluation process includes technology use. To comply with the necessity of integrating technology into

[1] The Massachusetts Department of Education defines technology integration as the daily use of technology in classrooms, libraries, and labs to improve student learning.

the academic and technical curriculum, high quality professional development is provided to support teacher lesson plan development and collaboration with peers. 100% of instructors have individual teacher computers and technology is used daily for E-mail communications, lesson plan submittal, access to electronic library database of printed materials and IPass student management for daily attendance and mid-term and trimester grading reports. The detailed Technology Intranet contains resources for all staff, including the daily bulletin that is only available in electronic format. These procedures require all staff members to utilize technology daily. Staff members all have access to electronic grading with Easy Grade Pro.

2. *For Teaching and Learning - At least 85% of teachers use technology appropriately with students every day to improve student learning of the curriculum. Activities include some of the following: research, multimedia, simulations, data interpretation, communications, and collaboration (See the Massachusetts Recommended K-12 Instructional Technology Standards[2]).*

All academic and technical programs have access to the Library Media Center 26 computers and four computer labs: B122 – 30 computers, A132 – 10 computers, G216 – 25 computers and F114 – 10 computers. There is a portable wireless cart with five laptops for student computer use. The following list demonstrates the diverse availability of technology for the students:

Recent Upgrades to District technology include:

- Seismology program with seismograph and computer in Engineering Technology
- GIS software – Engineering Technology Program
- Upgraded PLTW (Project Lead the Way) software/curriculum is utilized in the Engineering Technology program
- Adobe Design Premium CS3 is utilized in Design and Visual Communications
- Microsoft Office 2007 is utilized in all academic, technical and administrative offices
- Avid Media Composer and Newscutter software is utilized in the TV Media program along with the Avid Unity Server for television video production purposes
- Adobe Creative Suite 3 production premium is utilized in the TV Media program
- MasterCAM in Machine Tool Technology

[2] The Massachusetts Recommended K-12 Instructional Technology Standards are available on the Department's web site (http://www.doe.mass.edu/edtech/standards.html).

B. Technology Literacy

1. *At least 85% of eighth grade students show proficiency in all the Massachusetts Recommended PreK-12 Instructional Technology Standards for grade 8.*

A computer literacy survey is administered to all 9th grade students to uncover weaknesses to be addressed. The results of the survey are given to all instructors and progress is documented in achieving proficiency.

2. *100% of teachers are working to meet the proficiency level in technology, and by the school year 2010-2011, 60% of teachers will have reached the proficiency level as defined by the Massachusetts Technology Self-Assessment Tool (TSAT)*[3].

The TSAT (Technology Self-Assessment Tool) is utilized annually to provide all staff with ongoing education, training and support in order to effectively incorporate technology into the curriculum and the teaching and learning process. The results of the data are used to provide teachers with technology-related courses and practices to enable them to acquire the necessary technological skills to facilitate student mastery of technology competencies within the classroom. Teachers will be provided with training in areas of technology that will enable them to use technology as a tool for individualizing instruction based on individual learning styles, developing assessment tools, and managing assessment results for each student. The focus will be to enable all staff to use technology to facilitate the systemic evaluation of curriculum, instruction, and assessment. Staff will be provided adequate training to use technology tools to enhance record-keeping functions and to share current and timely decision-making information.

At the current time 41% of teachers have met or surpassed the proficiency level as defined by the TSAT, with 15% of teachers at the proficiency level and 26% of teachers at the advanced level. Professional development activities will be offered to consistently focus on areas of weakness to adequately meet Benchmark 2 Technology Integration and Literacy with 100% of teachers working to meet the proficiency level in technology.

By the school year 2010-2011 the goal is to achieve a level of 60% of teachers having reached proficiency. This will require increasing by 19% the number of teachers having reached the proficient or advanced level, with 41% of teachers currently at the proficient or advanced level: 15% at proficient and 26% at the advanced level as defined by the Massachusetts TSAT.

[3] The Technology Self-Assessment Tool is available as an interactive tool on MassONE, as well as a printable PDF checklist (http://www.doe.mass.edu/edtech/standards/sa_tool.html).

C. Staffing

1. The district has a district-level technology director/coordinator.

The District currently has a District-level technology director/coordinator. The Director of Technology is assigned to provide overall leadership for all District/school technology functions. The roles and responsibilities include instructional technology, professional development, data management, Webmaster, network management, technical software/hardware troubleshooting/support, and coordination for all building technology. This includes supervision of one Computer Technology Specialist and 10 instructors in programs with a concentration in technology: Banking/Marketing/Retail, Business Automation Technology, Design and Visual Communications, Electronics/Robotics, Engineering Technology, Library Media Technology Specialist and Machine Tool Technology.

Due to the diverse nature of the roles and responsibilities of the Director of Technology, the goal is to review the technological requirements of the district to ensure that all areas are adequately addressed at all times.

2. The district provides one FTE instructional technology teacher per 60-120 instructional staff.

The District does not currently have one FTE instructional technology teacher per 60-120 instructional staff. This responsibility is currently shared with the Library Media Technology Specialist, Computer Technology Specialist, Business Automation Technology Instructor, and Director of Technology.

To adequately address Benchmark 3 Technological Literacy Staffing and the recommendation to provide one FTE instructional technology teacher per 60-120 instructional staff, the roles and responsibilities of those partially providing this responsibility, the Library Media Technology Specialist, Computer Technology Specialist, Business Automation Technology Instructor and Director of Technology, will be reviewed and recommendations made.

3. The district has staff dedicated to data management and assessment.

The District does not currently have staff members dedicated to data management and assessment. The Director of Technology's position is responsible for all data management and the Director of Student Services is responsible for assessment.

To adequately address Benchmark 2 Technology Integration and Literacy Staffing, recommending dedicated staffing for data management and assessment, the goal is to review the roles and responsibilities of the individuals fulfilling these responsibilities to ensure that the data and assessment requirements for the District are adequately managed at all times.

Benchmark 3
Technology Professional Development

A. *At the end of three years, at least 85% of district staff will have participated in 45 hours of high-quality professional development[4] that includes technology skills and the integration of technology into instruction.*

Continual revision of the ongoing Professional Development is accomplished for integrating technology into administrative, academic, and technical areas. The staff is offered 10 hours per year of technology professional development based on staff surveys. This professional development is presented by the Director of Technology in after school sessions and attendance is optional.

To meet Benchmark 3 for Technology Professional Development, the goal is to provide additional organized professional development for all staff. This professional development will consist of at least 45 hours of high-quality technology professional development, including technology skills and integration of technology into instruction.

B. *Technology professional development is sustained and ongoing and includes coaching, modeling best practices, district-based mentoring, study groups, and online professional development. The professional development includes concepts of universal design and scientifically based researched models.*

Technology professional development has been consistently offered by the Director of Technology and this practice will be continued. There are coaching sessions and District-based mentoring practices held daily by the Director of Technology, Computer Technology Specialist, Library Media Technology Specialist, Business Automation Technology Instructor, students from Electronics/Robotics and Business Automation Technology. This will continue to be an ongoing practice. Instructors with a proficient level of technology skill will model best practices to their peers on a daily basis.

A study group for VCTCS (technical competencies) will be instituted over the two years to ensure that all technical instructors are properly trained in the use of the Department of Education Web-based VCTCS system for input of student competencies.

On-line professional development will be pursued by the District to offer flexible technology training for staff.

C. *Professional development planning includes an assessment of district and teachers' needs. The assessment is based on the competencies listed in the Massachusetts Technology Self-Assessment Tool.[5]*

[4] High quality professional development is described in the Massachusetts 2001 State Plan for Professional Development (http://www.doe.mass.edu/pd/stateplan/).

[5] Details are available on the Department's web site (http://www.doe.mass.edu/edtech/standards/sa_tool.html).

Results for 2006-2007 TSAT
Total number of educators and administrative staff who have taken the TSAT over the last three years = 89

The table below shows the number of educators and administrators who are currently working on each skill level (that is they have not yet mastered that level). The advanced level is an exception; it includes educators who have mastered the advanced level as well as those who are still working on this level.

Performance Level % of Staff	**2005**	**2006**	**2007**
Early Technology	71%	46%	44%
Developing Technology	13%	20%	16%
Proficient	5%	10%	15%
Advanced	11%	24%	26%

The table above demonstrates the effectiveness of the technology professional development and improvements in accessibility to technology over the last three years. The percentage of educators and administrators at proficient and advanced has steadily increased over the last three years from 16% in 2005, 34% in 2006 and 41% in 2007.

D. *Administrators and teachers consider their own needs for technology professional development, using the technology self-assessment tools provided by the Massachusetts Department of Education or similar tools.*[6]

All administrators and teachers participate in the Massachusetts TSAT on an annual basis and this data is utilized for setting personal goals for technology professional development.

The goal is to continue to participate in the Massachusetts TSAT on an annual basis to provide administrators and teachers with useful data for setting personal goals for technology professional development.

[6] A sample administrator technology self assessment tool is available on the Department's web site (http://www.doe.mass.edu/edtech/standards/tsat_sampadmin.html). The Technology Self-Assessment Tool (TSAT) for teachers is also available as a printable document and as an interactive tool on MassONE (http://www.doe.mass.edu/edtech/standards/sa_tool.html).

Benchmark 4
Accessibility of Technology

A. Hardware Access

1. *The district has an average ratio of fewer than five students per high-capacity[7], Internet-connected computer. The Department will work with stakeholders to review the capacity of the computer on an annual basis. (The goal is to have a one-to-one, high-capacity, Internet-connected computer ratio.)*

The current student to computer ratio is 2.5 students per Category A/B Computers. To meet the eventual goal of a one-to-one, high-capacity, Internet-connected computer ratio, it is recommended that additional student classroom Category A computers be added to the inventory over the next three years.

2. *The district provides students with' access to portable and/or handheld electronic devices appropriate to their grade level.*

At this time there are several portable and/or handheld electronic devices utilized the technical areas of Automotive Technology, Carpentry, Electrical Technology, Electronics/Robotics and TV Media Production.

3. *The district maximizes access to the general education curriculum for all students, including students with disabilities, using technology in classrooms with universal design principles and assistive technology devices.*

All staff, including Special Education instructors, ensure that access to the general education curriculum is available for all students when using technology. Universal design principles and assistive technology devices are included when student educational plans are developed and for the general population in strengthening student success in academic and technical programs.

4. *The district has procurement policies for information and instructional technologies that ensure usability, equivalent access, and interoperability.*

The detailed three-year budgeting process currently in place allows for all staff to participate in the budget creation process and make recommendations for purchase contingent on funding availability.

[7] The Department defines a high-capacity computer as a computer that has at least 256 RAM and either a Pentium 4 processor or a Macintosh G4 processor (or equivalent). The Department also refers to these as Type A computers.

5. *The district provides classroom access to devices such as digital projectors and electronic whiteboards.*

There are currently four electronic whiteboards and twelve digital projectors available in labs and technical programs. Six of the digital projectors are portable models that can be utilized in classrooms throughout the building.

There are three labs whereby digital projectors need to be permanently available, G216, F114, A132 and four more electronic whiteboards would be beneficial in Business Automation Technology, Design and Visual Communications, F114 and A132.

6. *The district has established a computer replacement cycle of five years or less.*

The goal is to develop a policy for computer replacement to meet the recommended Department of Education timeline of five years or less.

B. Internet Access

1. *The district provides connectivity to the Internet in all classrooms in all schools including wireless connectivity, if possible.*

Currently Internet access is available in all classrooms and portable wireless connectivity is also available.

2. *The district provides bandwidth of at least 10/100/1 Gb to each classroom. At peak, the bandwidth at each computer is at least 100 kbps. The network card for each computer is at least 10/100/1 Gb.*

The District provides 10/100/1 Gb to each classroom. The peak bandwidth capacity at times does not meet the recommended rate at each computer of at least 100 kbps. The network card for each computer is at least 10/100/1 Gb.

To adequately address Benchmark 4 Accessibility of Technology and Internet Access of at least 100 kbps to each computer, the goal is to investigate other options to the current T-1 Internet service.

C. Networking (LAN/WAN)

1. *The district provides a minimum 100 Mb Cat 5 switched network and/or 802.11b/g/n wireless network.*

The District completed an addition and renovation project completed in 2004 whereby the entire network infrastructure was completely updated to meet Benchmark 4 Accessibility of Technology for networking of 100 Mb Cat 5 switched

network and/or 802.11b/g/n wireless network.

2. *The district provides access to servers for secure file sharing, backups, scheduling, email, and web publishing, either internally or through contracted services.*

The District currently provides access to servers with secure file sharing, backups, scheduling, e-mail and Web publishing.

For secure remote/offsite backup, vendors will be researched and recommended.

D. Access to the Internet Outside the School Day

1. *The district works with community groups to ensure that students and staff have access to the Internet outside of the school day.*

The Nashoba Valley Technical District is represented by the towns of Chelmsford, Groton, Littleton, Pepperell, Shirley, Townsend and Westford. The public libraries of the District towns all provide Internet access outside of the school day.

2. *The district web site includes an up-to-date list of places where students and staff can access the Internet after school hours.*

The Web site contains an accurate listing of all the public libraries in the District towns with Internet access where students and staff can access the Internet after school hours.

E. Staffing

1. *The district provides a network administrator.*

The district does not at this time employ a staff member dedicated to the responsibilities of network administration. The goal is to review the roles and responsibilities of the technology department personnel to more adequately address the growing needs of the district.

2. *The district provides timely in-classroom technical support with clear information about how to access the support, so that technical problems will not cause major disruptions to curriculum delivery.*

A methodology has been established for managing and servicing the growing installed base of computer hardware, software and network infrastructure for administrative, academic, and technical environments. The staff and students in the Business Automation Technology and Electronics programs support the technology throughout the school along with the Director of Technology and Computer Technology Specialist. There is an electronic helpdesk available for all staff for automatically generating helpdesk tickets.

To adequately address Benchmark 4 Accessibility of Technology and timely in-classroom technical support, review of the methodology for managing and servicing the computer hardware/software and network components to reduce the downtime that is experienced due to the large volume of services being provided.

3. *The district provides at least one FTE person to support 200 computers. Technical support can be provided by dedicated staff or contracted services.*

The district does not currently provide at least one FTE person and/or contracted services dedicated to supporting the 300+ computers and 25 servers. There is currently one FTE Computer Technology Specialist with diverse roles and responsibilities to adequately support all aspects of the District technology.

To meet the staffing recommendation of providing at least one FTE and/or contracted services to support every 200 computers, the roles and responsibilities of the Director of Technology, Computer Technology Specialist and program support from Business Automation Technology and Electronics will be reviewed to ensure that adequate support levels are consistently provided.

Benchmark 5
E-Learning and Communications

A. *The district encourages the development and use of innovative strategies for delivering specialized courses through the use of technology.*

The District will continue to provide a manageable, well-defined offering of technology-focused workshops, courses, and seminars aligned with curriculum goals.

B. *The district deploys IP-based connections for access to web-based and/or interactive video learning on the local, state, regional, national, and international level.*

The District deploys IP-based connections for access to web-based interactive learning at this time.

The goal to meet Benchmark 5 E-Learning and Communications is to provide additional bandwidth to accommodate interactive video on the local, state, regional, national, and international level.

C. *Classroom applications of e-learning include courses, cultural projects, virtual field trips, etc.*

There are various classroom applications of e-learning taking place at this time including courses, cultural projects, virtual field trips, etc.

One goal of professional develop activities will be to incorporate applications of e-learning to include courses, cultural projects, virtual field trips, etc.

D. The district maintains an up-to-date web site that includes information for parents and community members.

The District maintains an up-to-date Web site that includes information for parents and community members. The current design of the site requires improvement for ease of locating information and streamlining of the update process.

The plan is to upgrade Web site design and hosting to allow for more effective communication with students, parents, staff, School Committee members and the community. To promote the Web site as a school-wide communication tool everyone must utilize and ensure that proper individuals are able to quickly and easily update Web pages pertaining to their areas of responsibility.

E. The district complies with federal and state law[8], and local policies for archiving electronic communications produced by its staff and students. The district informs staff and students that any information distributed over the district or school network may be a public record.

The district implemented a Microsoft Exchange 2007 e-mail server in 2007 to comply with the e-mail archiving required by law. All staff and students are informed through the Acceptable Use Policy signed for network and Internet access that any information distributed over the district or school network may become a public record. This information is presented in section IV. Privacy of the Nashoba Valley Technical High School Acceptable Use Policy for students and staff as follows: "Users should not have an expectation of privacy or confidentiality in the content of electronic communications or other computer files sent and received on the school computer network or stored on the user's directory or on a disk drive. The District reserves the right to examine all data stored on diskettes involved in the user's use of the District's Network.

Internet messages are public communication and are not private. All communications including text and images may be disclosed to law enforcement or other third parties without prior consent of the sender or the receiver. Network administrators may review communications to maintain integrity system-wide and ensure that users are using the system responsibly and in accordance with this policy."

To further comply with Benchmark 5 E-Learning and Communications the following statement about the potential for any e-mail communications becoming a part of public record during legal action is attached to all e-mail "When writing or responding, please remember that the Secretary of State's Office has determined that email is public record."

[8] Information about state regulations is available from the state's Record Management Unit (http://www.sec.state.ma.us/arc/arcrmu/rmuidx.htm).

Funding – E-rate

1. Goals and strategies for using telecommunications and information technology to improve education:

Instructional Technology Objectives

- Continually update the school's curriculum guides to support the Massachusetts Recommended K-12 Instructional Technology Standards and Massachusetts Curriculum Frameworks, No Child Left Behind and Chapter 74 Regulations
- Provide teachers with access to computer hardware and software for instructional and administrative purposes.
- Provide clusters of networked computers with access to databases, specialized remote databases, and the information resources of the Internet.
- Install critical-thinking and problem-solving software applications that support the various disciplines and teaching practices as defined by the Massachusetts Curriculum Frameworks (Arts, World Languages, Health Education, English Language Arts, Mathematics, Science and Technology, and Social Studies), Chapter 74 Technical Frameworks and Massachusetts Recommended K-12 Instructional Technology Standards.
- Equip computers in academic and lab areas with appropriate probes and other data collection sensors and computers in technical areas with modular teaching systems that will enhance the classroom curriculum.
- Utilize specialized presentation software applications, such as PowerPoint, and video production software, such as Microsoft Movie Maker to enable students to create multimedia presentations and video presentations.
- Utilize faculty and staff electronic mail accounts to facilitate timely and effective communication.
- Use educational technology to support the individual learning styles and handicaps of the student population with special needs and to facilitate their inclusion into regular classroom activities.

2. Professional development strategy:

Professional Development Objectives

- Utilize the TSAT (Technology Self-Assessment Tool) data to provide all staff with ongoing education, training and support in order to effectively incorporate technology into the curriculum and the teaching and learning process.
- Provide teachers with technology-related courses and practices to enable them to acquire the necessary technological skills to facilitate student mastery of technology competencies within the classroom.
- Provide teachers with training in areas of technology that will enable them to use technology as a tool for individualizing instruction based on individual learning

styles, developing assessment tools, and managing assessment results for each student.
- Enable all staff to use technology to facilitate the systemic evaluation of curriculum, instruction, and assessment.
- Enable all staff to use technology tools to enhance record-keeping functions and to share current and timely decision-making information.

3. Assessment of the telecommunication services, hardware, software, and other services that will be needed to improve education services:

- Nashoba Valley Technical High School will upgrade the school-wide network for greater efficiency in administrative, academic, technical, lab, and library functions
- The District will continue to use electronic mail and document transfer capability to increase efficiency and to promote timely communication between administrators and faculty
- All efforts will be made to ensure that the network and network services provided to all staff, teachers and students operates at optimal speed and efficiency.

4. A sufficient budget will be provided to acquire and support the non-discounted elements of the plan: the hardware, software, professional development and other services that will be needed to implement the strategy:

- Equipment will be budgeted for to ensure that replacement equipment is available when needed to keep the network running smoothly and efficiently.
- Network electronics will be replaced when their life cycle has run out.
- All systems will be monitored and kept running at optimal performance to ensure all technologies for instructional, maintenance, and student purposes will be accessible.
- Total cost of ownership (TCO) will be considered when purchasing equipment.
- When purchasing, new network technologies will be evaluated for price, performance and features.
- A replacement schedule of five years will be designed for all computer workstations.

5. An evaluation process is in place that enables the school to monitor progress toward the specified goals and make mid-course corrections in response to new developments and opportunities when they arise.

This plan will be updated on a regular basis as it becomes evident during implementation that changes are needed. To this end an on-going process will be developed to monitor, evaluate, and revise the plan. On-going monitoring and evaluation of the plan will provide answers to such questions as:

- Which objectives have been attained / Actions taken during the past year?
- Has attaining these objectives / taking these Actions enabled students to meet or

exceed curriculum standards in all areas and if not why not?
- Which of the past year's objectives that have not been met / Actions that have not been taken need attention?
- What needs to happen in order for these objectives to be met / these Actions to be taken?
- Based on the evaluation of the past year, what changes in objectives, priorities, and implementation strategies are required?

The evaluation will include input from the Superintendent, the Assistant Superintendent/ Principal, the Director of Technology, the academic, vocational-technical, and administrative staff, and the vocational-technical advisory boards along with data provided by curriculum assessments and annual school-wide technology surveys of staff. The Director of Technology will meet with representatives of each department to collect and compile this information. The results will serve as a basis for action planning for the coming year.

The Technology will be evaluated on a regular basis to assess progress, make recommendations, and continually support the integration of technology into academic, technical and administrative functions. The plan will be revised to reflect new information and changing conditions.

The Director of Technology will furnish periodic progress reports to the Superintendent, the Assistant Superintendent/Principal, School Committee and the staff that include the results of the evaluation and the action plan with related budget for the coming year. The school community will be informed of the progress of implementation through Web posting of this information, open houses and programs which feature and display projects which have incorporated technology.

- Nashoba Valley Technical High School will measure the results that have been accomplished during the previous year against its technology plan utilizing the Department of Education Technology Plan update submitted on an annual basis.

- The District will revise its technology plan for the coming year based on the results of the annual monitoring and evaluation and the recommended 2011 Technology Benchmarks from the Department of Education.

- In addition to the above-mentioned evaluation procedures for the Technology Plan, in conjunction with the data provided on the annual Technology Plan Update forms to the Department of Education, a rubric of the goals for the three-year technology plan will be updated. The rubric will contain the benchmarks, goals, responsible person(s) and status update.